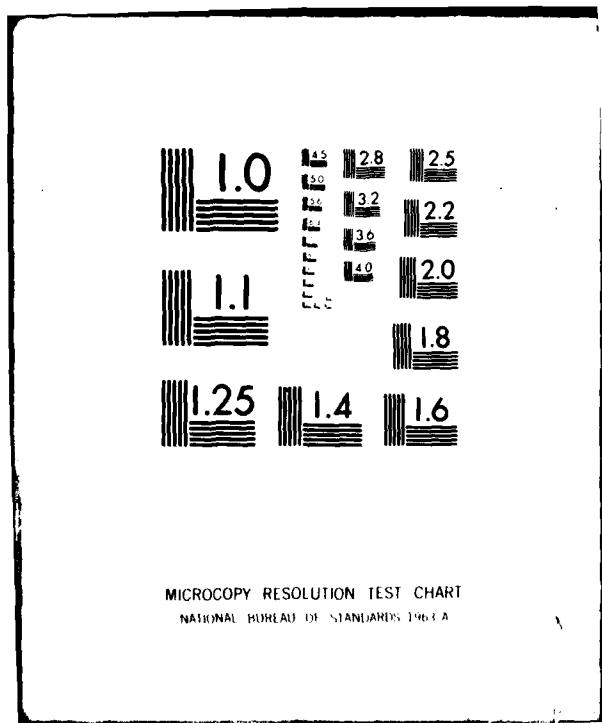


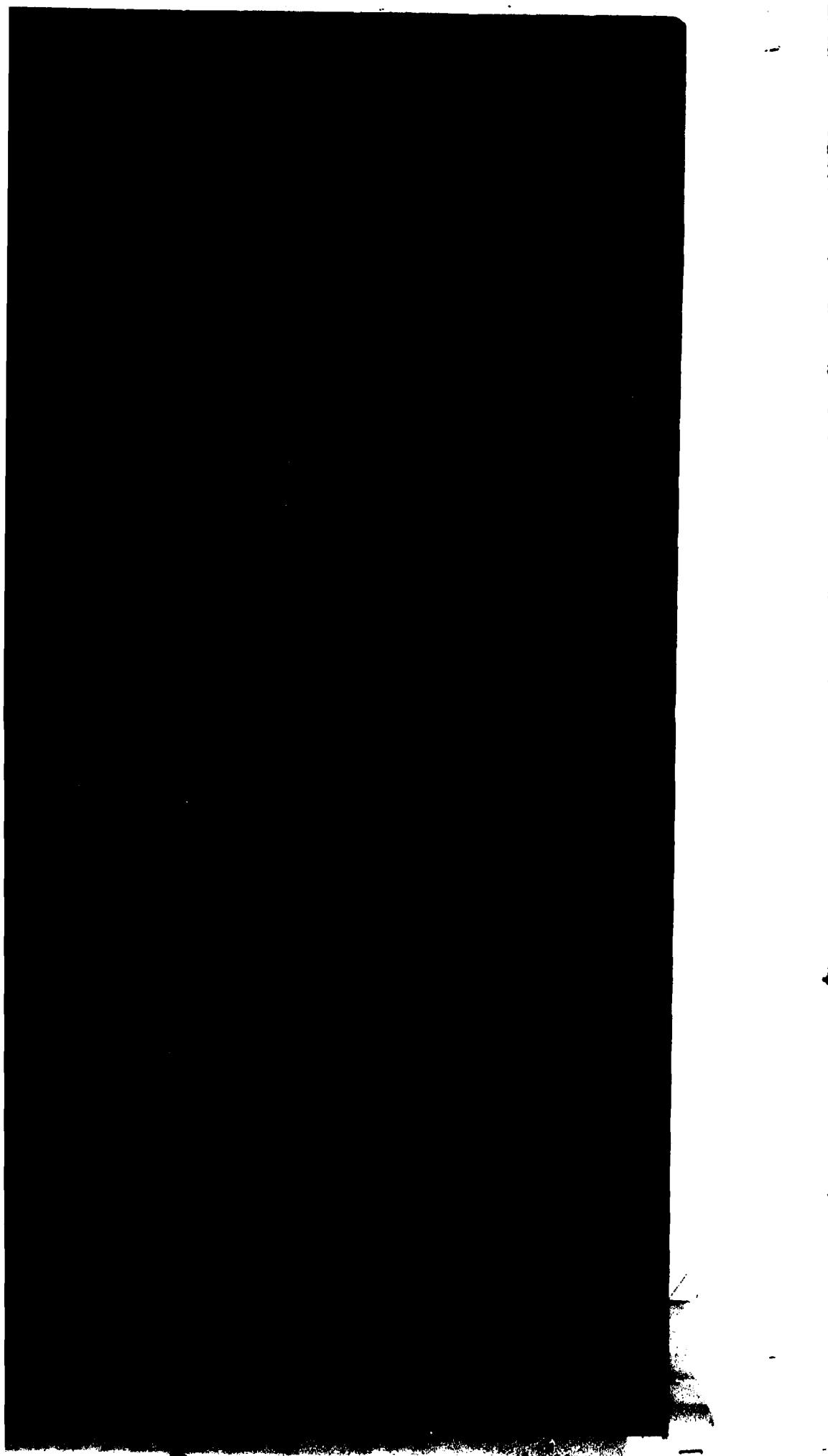
AD-A089 747 NAVAL OCEANOGRAPHIC OFFICE NSTL STATION 05 F/B 8/3
SURFACE CURRENTS, NORTHWEST PACIFIC OCEAN AND SEA OF JAPAN. (U)
APR 77

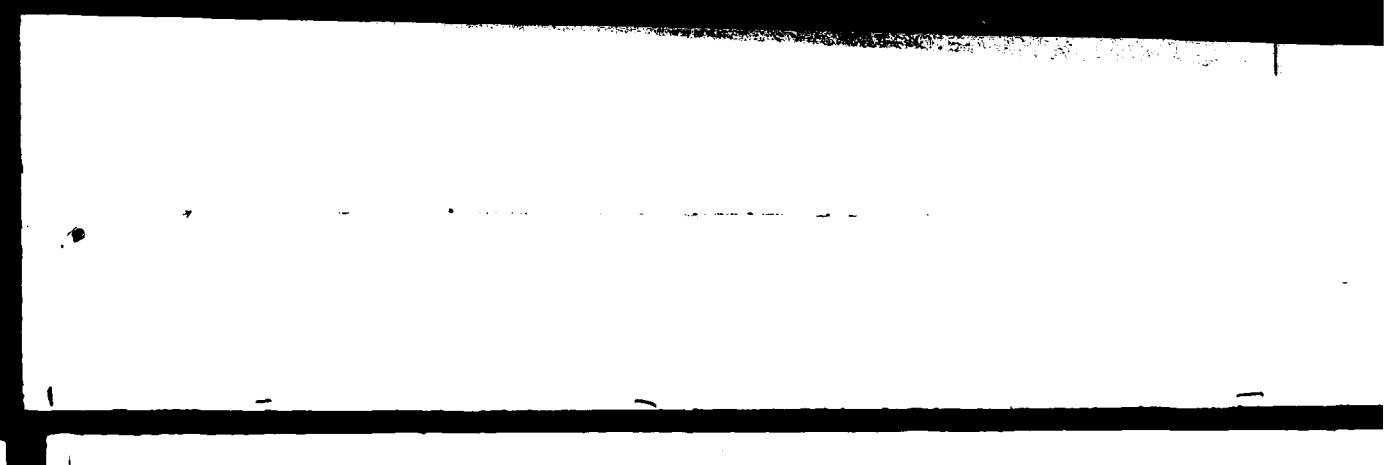
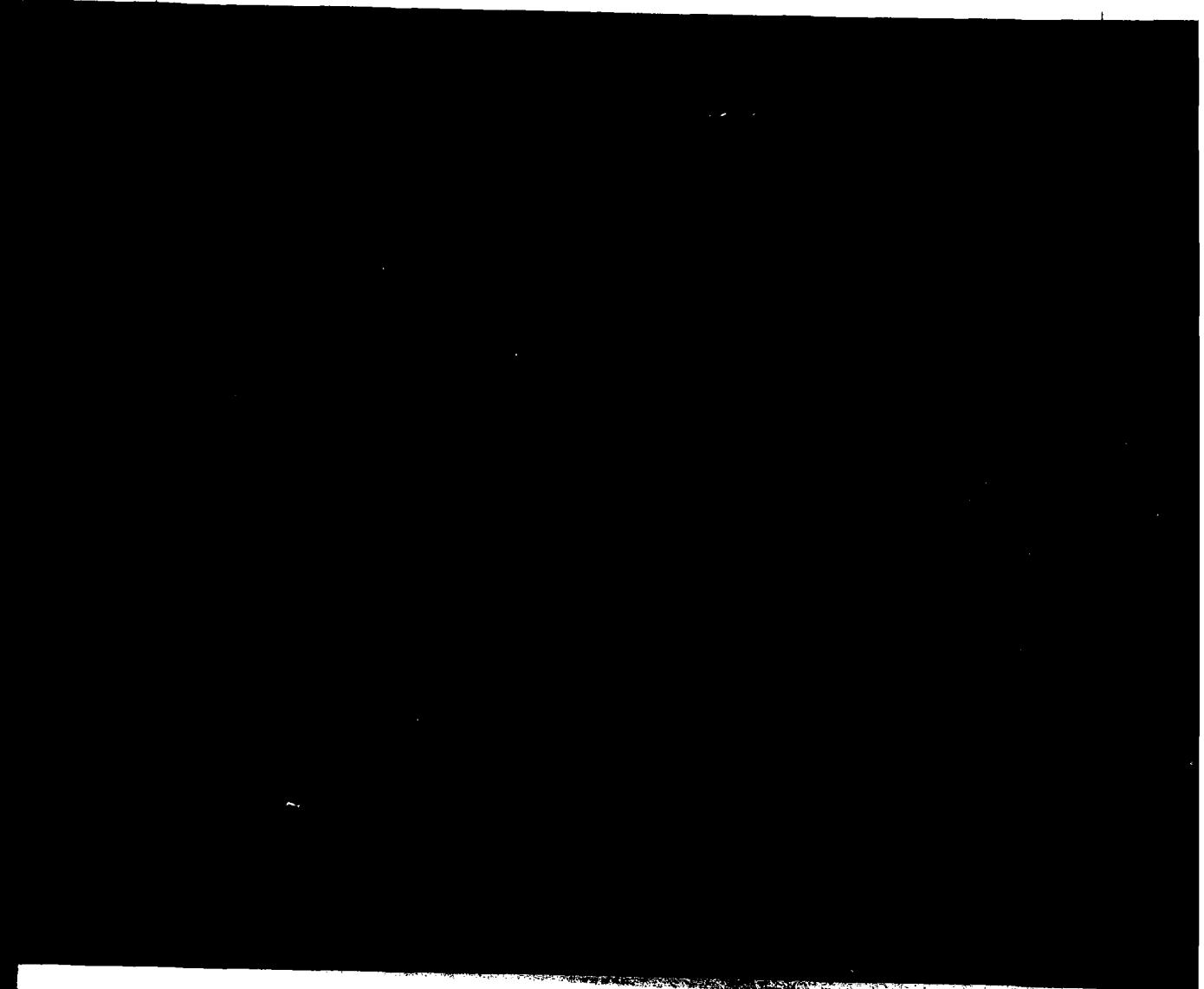
UNCLASSIFIED NOO-SP-1402-NP-7

NL

END
DATE FILMED
11-80
DTIC







(14) (NOO-SP-1402-NP-7)

SURFACE CURRENTS

NORTHWEST PACIFIC OCEAN
AND
SEA OF JAPAN.



APR 1977

APPROVED FOR PUBLIC RELEASE: DISTRIBUTION UNLIMITED.

NAVAL OCEANOGRAPHIC OFFICE ✓
WASHINGTON, D. C. 20373

ACKNOWLEDGMENTS

Messrs. Raymond J. Beauchesne* and William E. Boisvert
made major contributions to this atlas.

*Mr. Beauchesne presently is employed by the Bureau of
Naval Personnel.

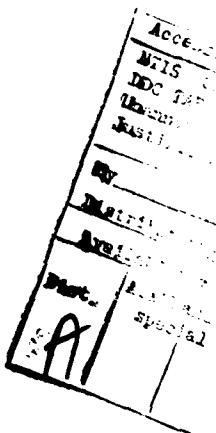
FOREWORD

THIS ATLAS, ONE IN A SERIES OF 43 REGIONAL SURFACE CURRENT ATLASES, IS PRODUCED TO FULFILL A NEED OF NAVY PLANNING STAFFS AND THE SCIENTIFIC AND INDUSTRIAL COMMUNITIES FOR THE LATEST AVAILABLE OCEAN SURFACE CURRENT DATA. THESE ATLASES ADD TO THE WEALTH OF NAUTICAL INFORMATION UPON WHICH OPERATIONAL PLANNING, NAVIGATIONAL SAFETY, AND SHIPPING ECONOMY DEPEND. RAPID PRODUCTION AND WIDE DISSEMINATION OF THIS ATLAS ARE MADE POSSIBLE BY THE LATEST COMPUTER TECHNIQUES.

THE CONSTANT IMPROVEMENT IN THE QUALITY OF SURFACE CURRENT DATA RECEIVED OVER THE YEARS IS MADE POSSIBLE LARGELY BY THE MORE THOROUGH REPORTS OF VOLUNTARY OBSERVERS IN RECENT YEARS. THE DEFENSE MAPPING AGENCY, THE OCEANOGRAPHIC OFFICE, AND THE USER OF THE ATLASES RELY ON THE PERSONAL OBSERVATIONS OF THE MAN WHO HAS "BEEN THERE." MARINERS, IN REPORTING THEIR OBSERVATIONS, RENDER A SERVICE NOT ONLY TO THEMSELVES BUT ALSO TO ALL "WHO GO DOWN TO THE SEA IN SHIPS." WITH THE ADVENT OF NUCLEAR POWER, ELECTRONIC NAVIGATION AIDS, AND 300,000-TON SHIPS, UP-TO-DATE, RAPIDLY DISSEMINATED ENVIRONMENTAL AND NAVIGATIONAL INFORMATION HAS BECOME INCREASINGLY IMPORTANT.



J. E. MYRES
Captain, USN
Commander



SURFACE CURRENT ALASES

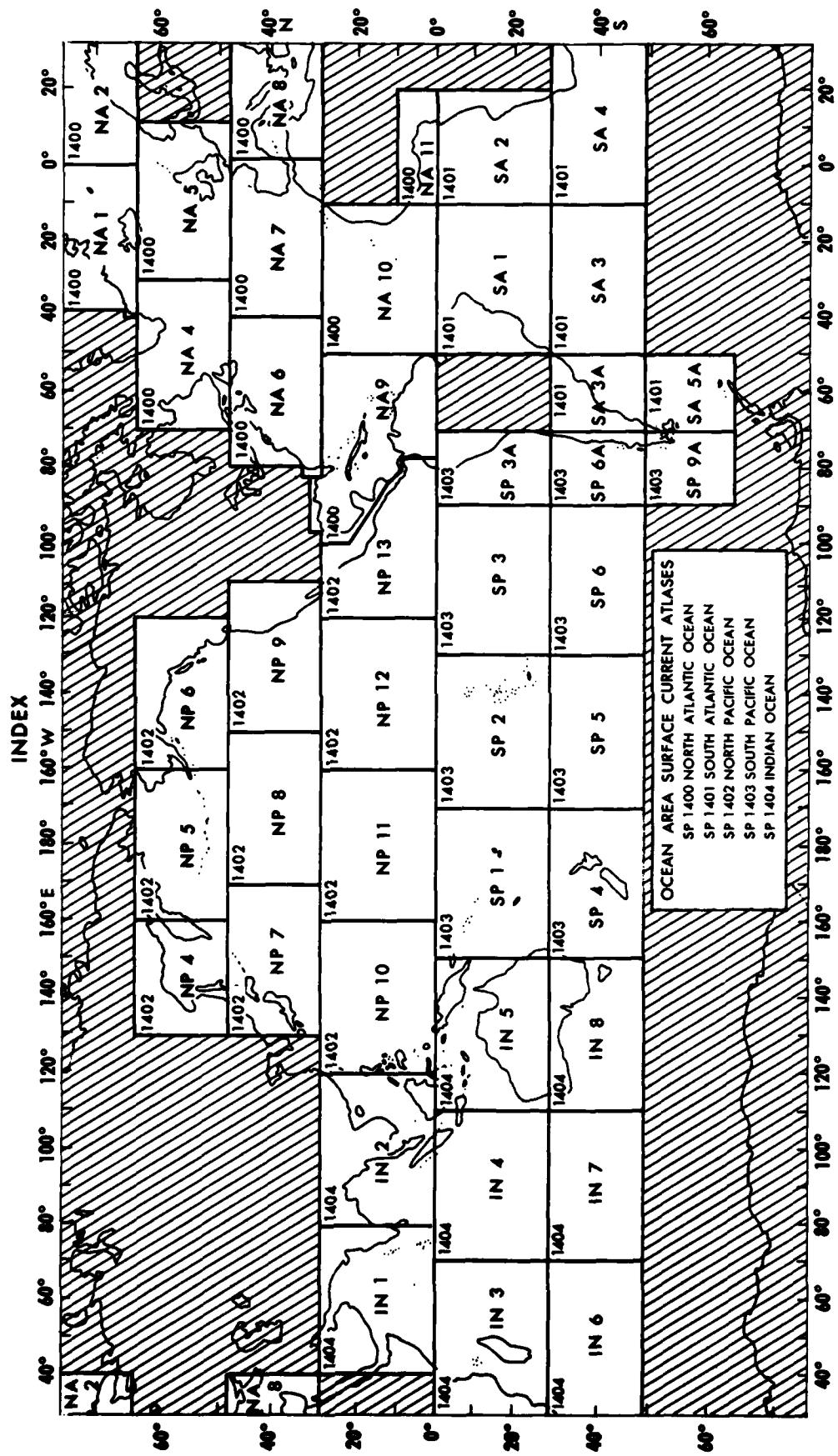
THIS SERIES OF COMPUTERIZED ATLASSES REPLACES THE OLD HYDROGRAPHIC OFFICE ATLASSES OF SURFACE CURRENTS (NO. 566, 568, 569, 570) WHICH WERE MANUALLY COMPILED FROM DATA OBTAINED DURING THE PERIOD 1903 - 1934. THESE NEW ATLASSES CONFORM TO THE STANDARD NAVY OCEAN AREA AND REGION INDEX LIMITS SHOWN BELOW:
e.g., NOO SP 1402-NP 10 COVERS NORTH PACIFIC REGION 10 EAST OF THE PHILIPPINES

THESE GRAPHICS MAY NOT BE TRULY REPRESENTATIVE OF THE ACTUAL FLOW IN SUCH AREAS AS THE NORTH SEA, PERSIAN GULF, GULF OF THAILAND, AND YELLOW SEA WHERE CURRENTS ARE STRONGLY TIDAL. FOR SUCH AREAS, OTHER SOURCES DESCRIBING PREDICTABLE HOURLY CHANGES OF TIDAL CURRENTS SHOULD BE CONSULTED.

RECENT IMPROVEMENTS IN THE DATA FILE ASSURE THE INCLUSION OF THE LATEST, HIGH SURFACE CURRENT DATA AVAILABLE. THE FILE NOW CONTAINS MORE THAN 4,200,000 OBSERVATIONS AND A GENERAL UPDATE OF THE FILE WILL BE MADE

AS AMOUNTS OF NEW DATA WARRANT: MOST LIKELY EVERY 12 - 18 MONTHS.

THESE GRAPHICS MAY NOT BE TRULY REPRESENTATIVE OF THE ACTUAL FLOW IN SUCH AREAS AS THE NORTH SEA, PERSIAN GULF, GULF OF THAILAND, AND YELLOW SEA WHERE CURRENTS ARE STRONGLY TIDAL. FOR SUCH AREAS, OTHER SOURCES DESCRIBING PREDICTABLE HOURLY CHANGES OF TIDAL CURRENTS SHOULD BE CONSULTED.



Introduction

The Surface Current Data File, from which these atlases are derived, consists primarily of over four million ship set and drift observations. These data were collected by the Netherlands, Japan, Britain, France, and the United States. The file is supplemented by several thousand Geomagnetic Electrotiograph (GEM) observations. The file spans the period from the early 1850's to the present. The earliest observations were collected by the Netherlands and Great Britain; those of the 1960's through the present are primarily United States data.

General Quality

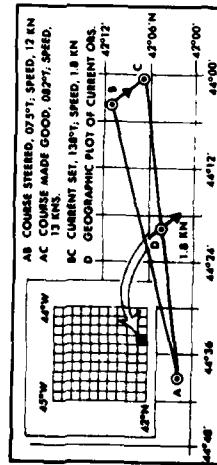
The quality of this data file is considered high for this type of derived value. The data have been carefully screened for duplication; observations taken under adverse conditions (i.e., high winds and waves), far between observations greater than 12 hours) have been eliminated. The data have been edited and observations of the observer (direction) is PFMN the DR position to the fix; the drift (speed) is equal to the distance in nautical miles between the DR and the fix, divided by the number of hours since the last fix. For successive observations, the TO POSITION of one observation becomes the PFMN POSITION of the next observation.

Because the influence of current may vary along a ship's track, the MEAN POSITION of the track is assigned as the geographic location of the current observation. An example of a current computation is shown in the figure below.

General Observation Technique

The set (direction) and drift (speed) are computed by the navigator from the difference between the dead reckoning (DR) position and the position determined by any type of navigational fix. The drift can be determined along any straight line track and includes all factors which cause changes in the DR position. When a fix is obtained, the current (direction) is PFMN the DR position to the fix; the drift (speed) is equal to the distance in nautical miles between the DR and the fix, divided by the number of hours since the last fix. For successive observations, the TO POSITION of one observation becomes the PFMN POSITION of the next observation.

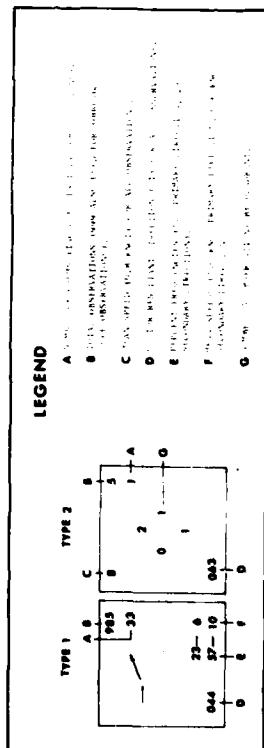
Because the influence of current may vary along a ship's track, the MEAN POSITION of the track is assigned as the geographic location of the current observation. An example of a current computation is shown in the figure below.



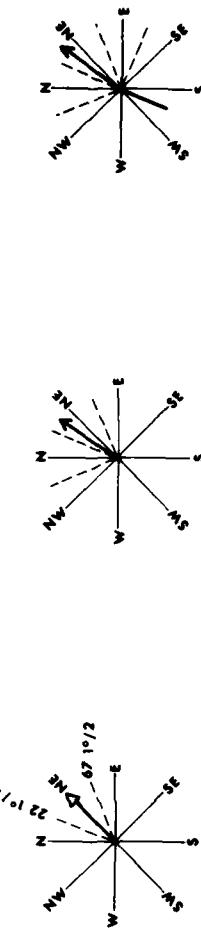
EXAMPLE OF A SURFACE CURRENT (SHIP'S DRIFT) OBSERVATION

Data Presentation

The following legend shows two types of surface current presentations by 1° quadrants. Type 1 with 12 or more observations and type 2 with fewer than 12 observations. Where there are 11 or fewer observations within a 1° quadrant, the total number of observations is shown within the 90° quadrant containing the observations.



If there are 12 or more observations in a 1° quadrant, the surface current is depicted by vector resultant as follows:

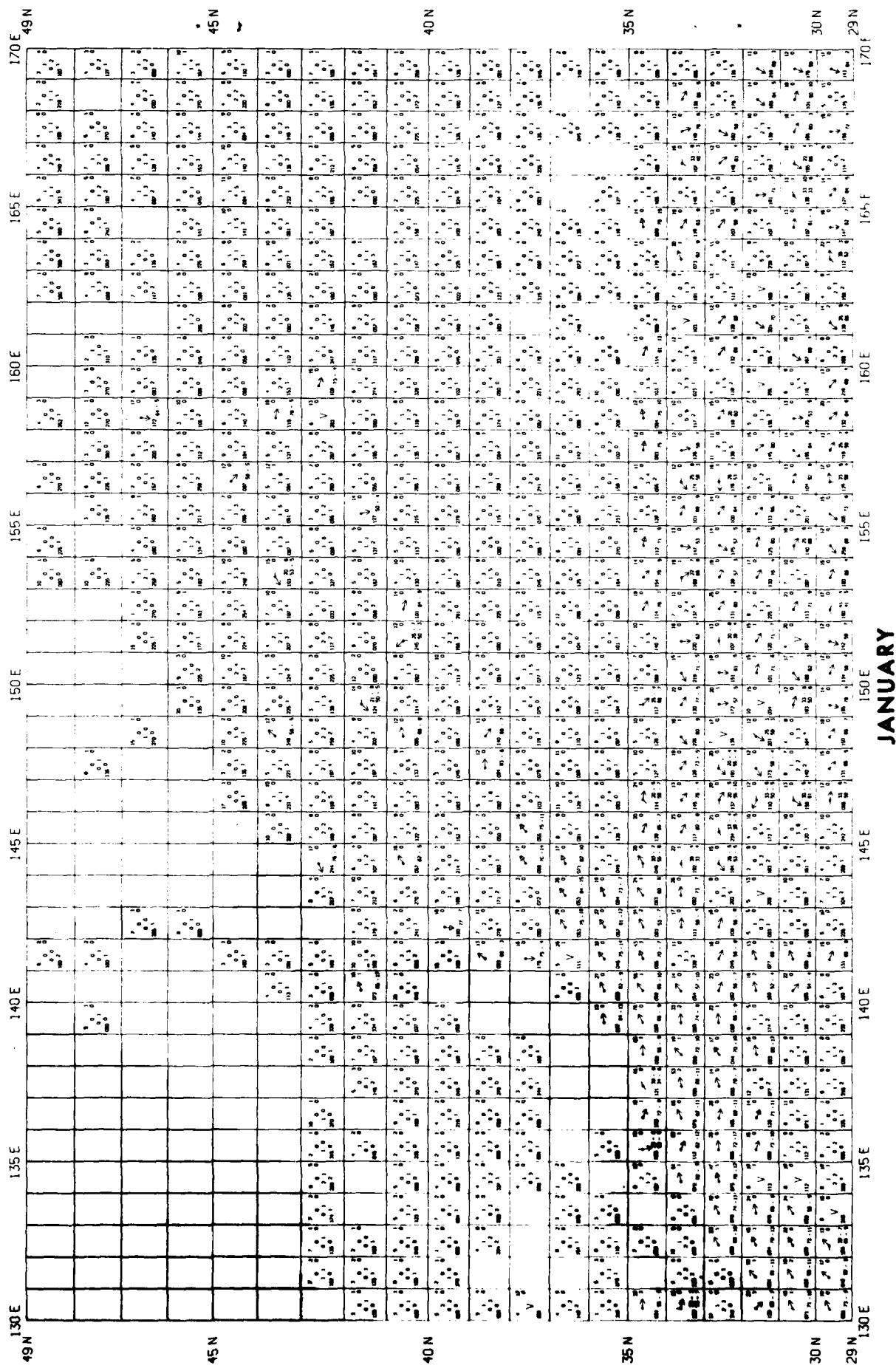


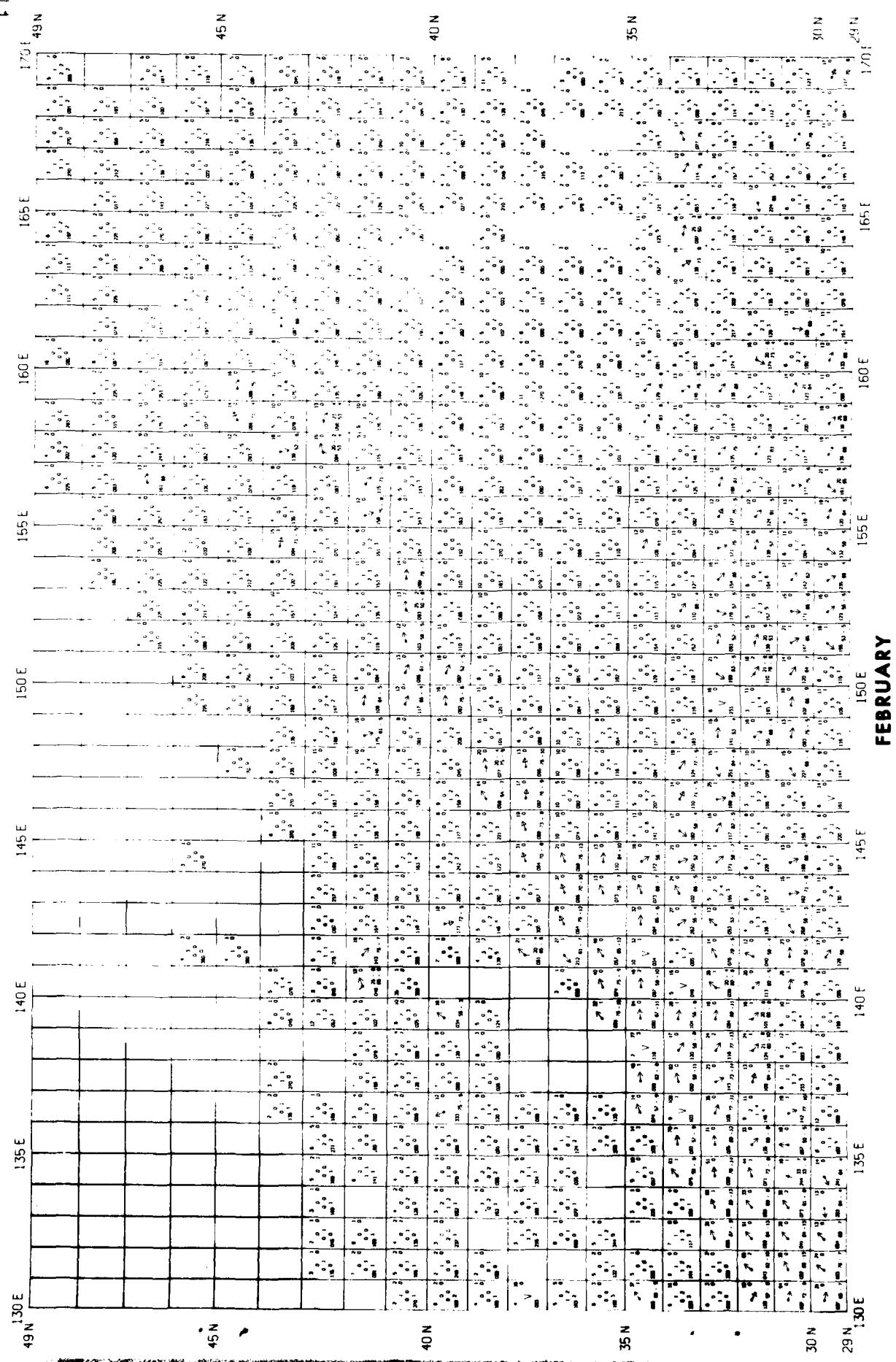
- (1) Persistent Current - 60 percent or more of all observations fall within a 45° sector of the 8-point compass.
- (2) Prevailing Current - 70 percent or more of all observations fall within two adjacent 45° sectors.
- (3) Primary Current with Secondary Direction - (a) Primary Current - 50 percent or more of all observations fall within three adjacent 45° sectors.
- (b) Secondary Direction - 20 percent or more of all observations fall within a 45° sector, and the two resultant vector directions are separated by more than 90° of arc.



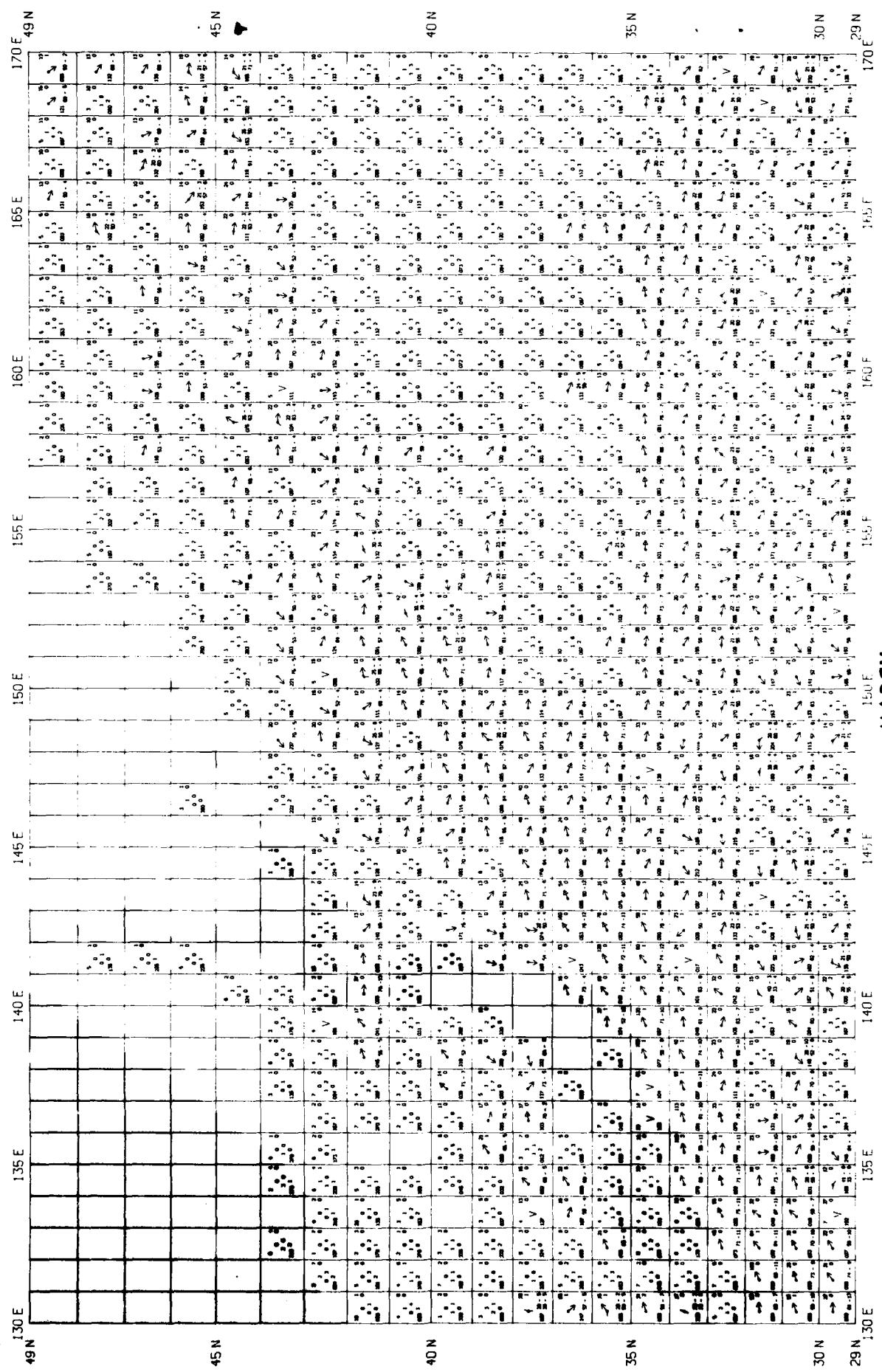
- (4) Calms - Practically all observations are concentrated in opposite pairs of 45° sectors, and one pair contains at least 80 percent as many observations as the opposite pair. This generally indicates variability that occurs in zones of entrainment between quadrangles 1, 2, and 3.
- (5) Variable Current - The 45° sector with most observations has less than 25 percent of all observations; direction is indeterminate.

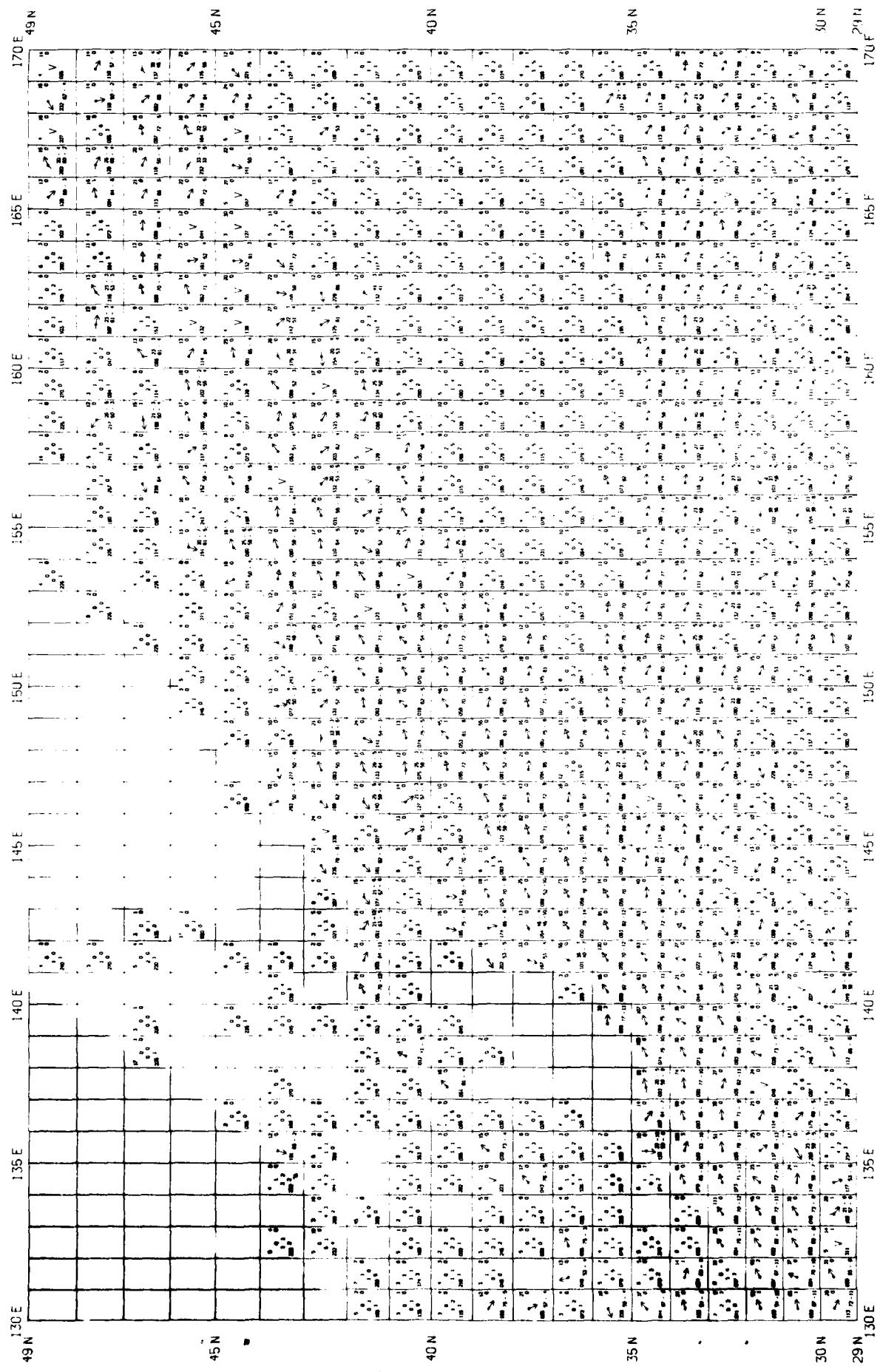


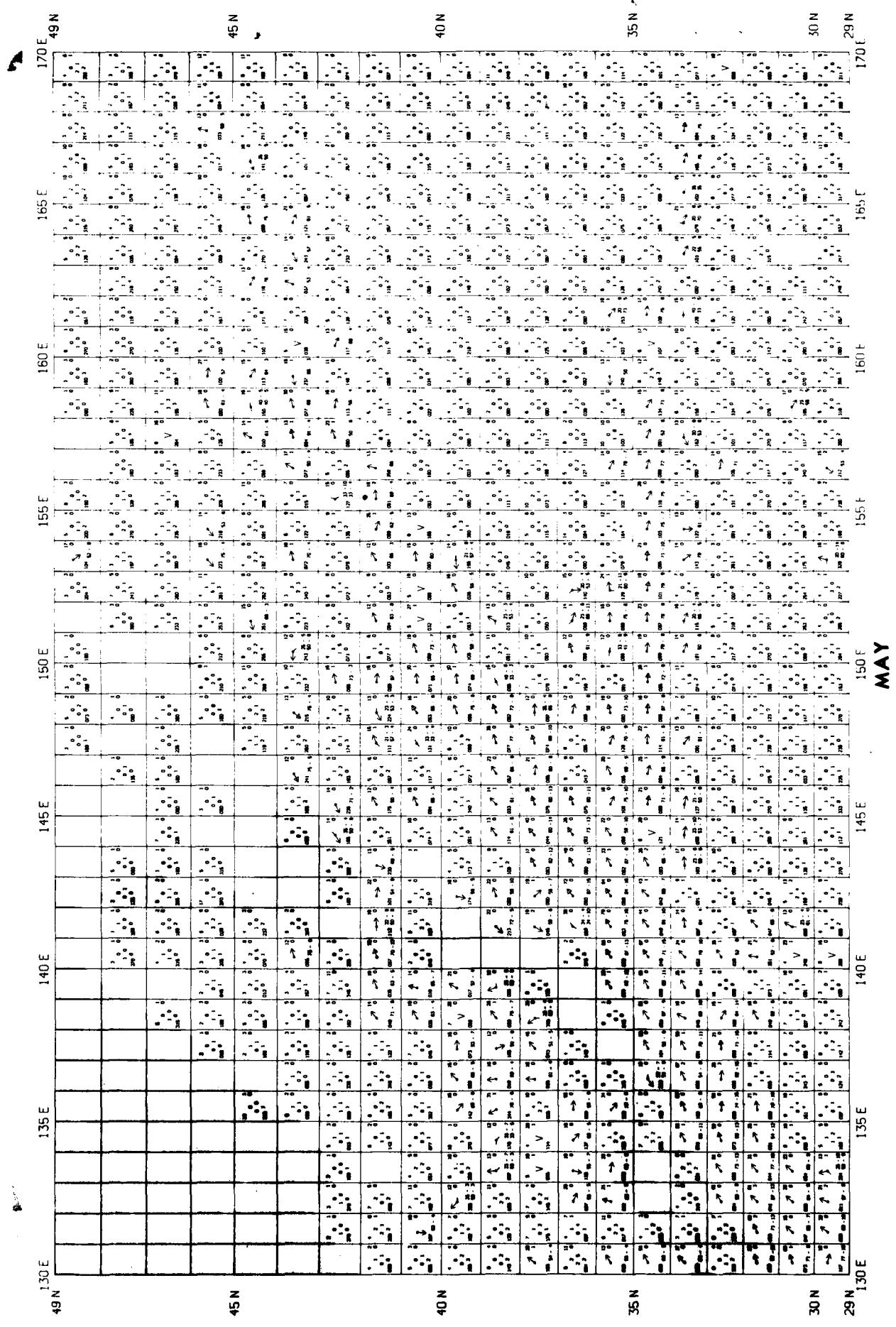




FEBRUARY

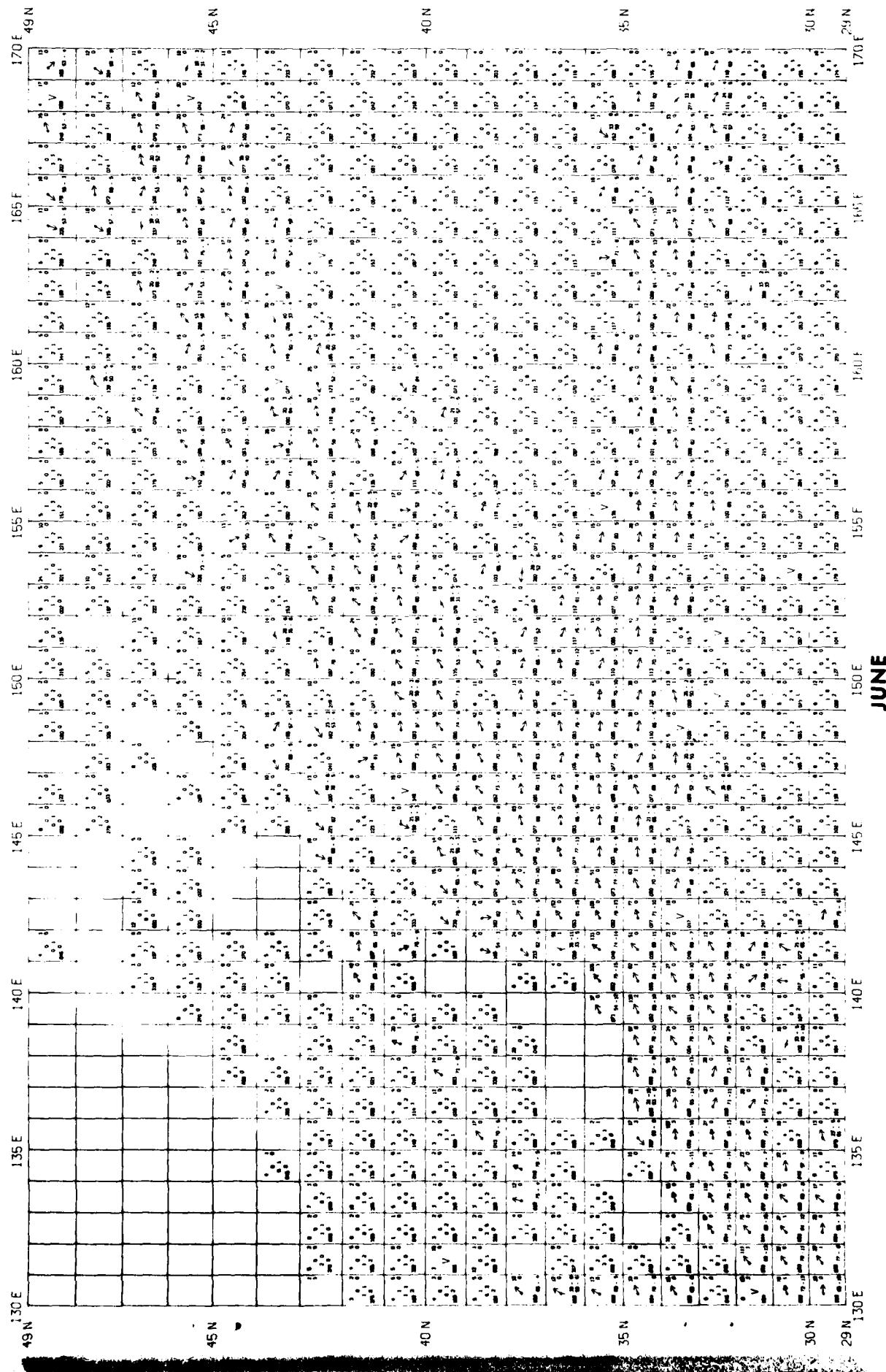


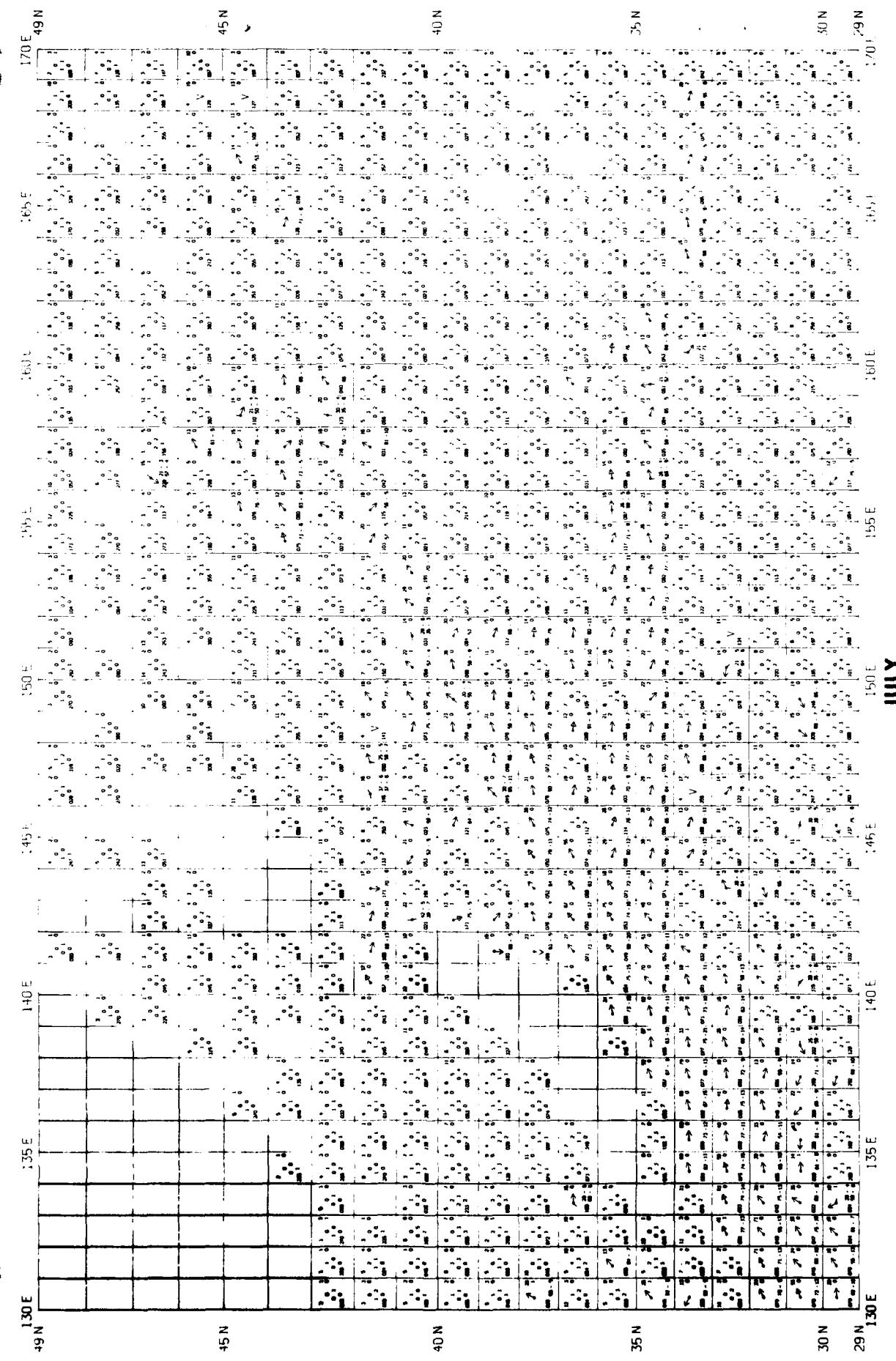




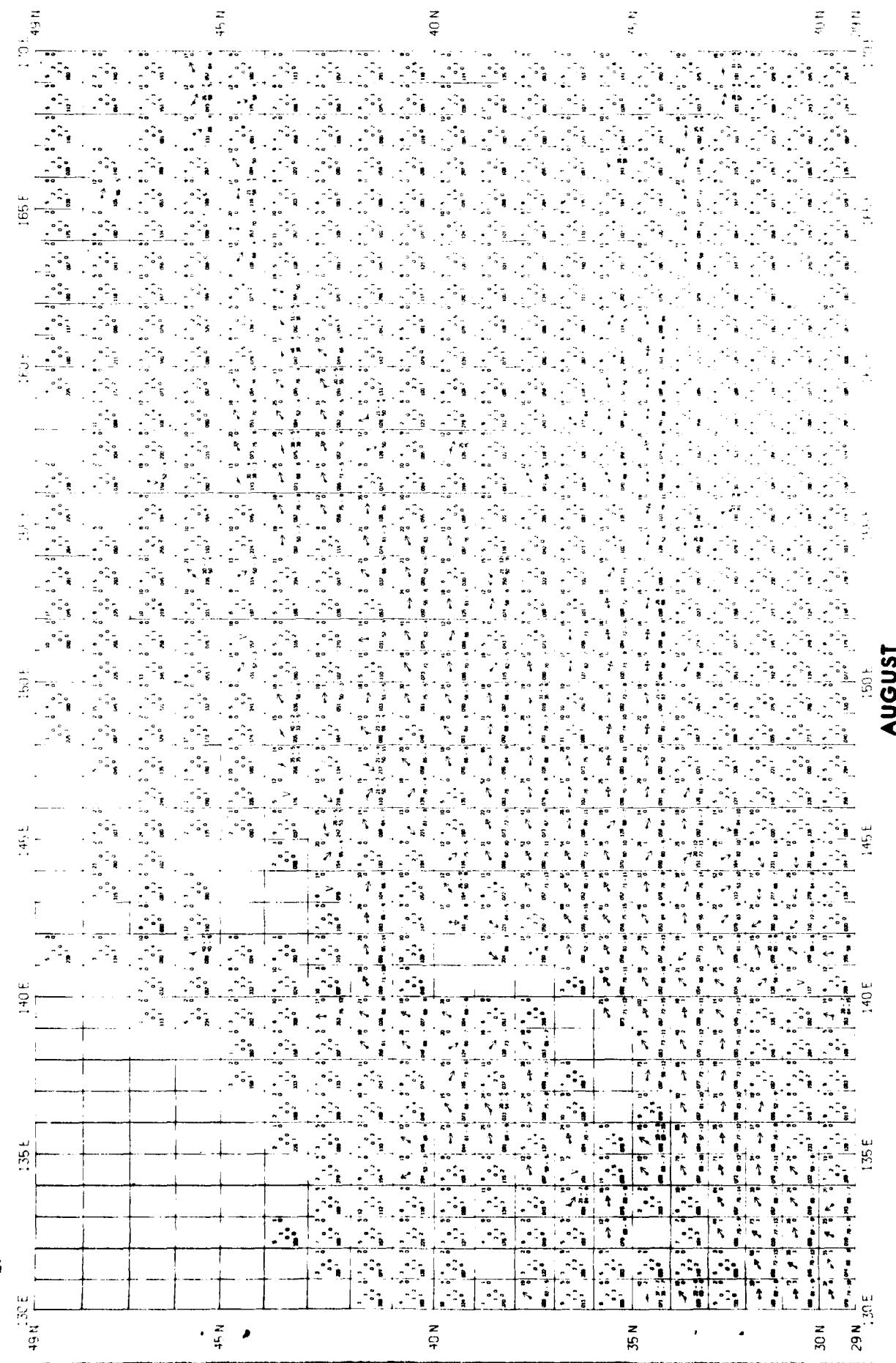
MAY

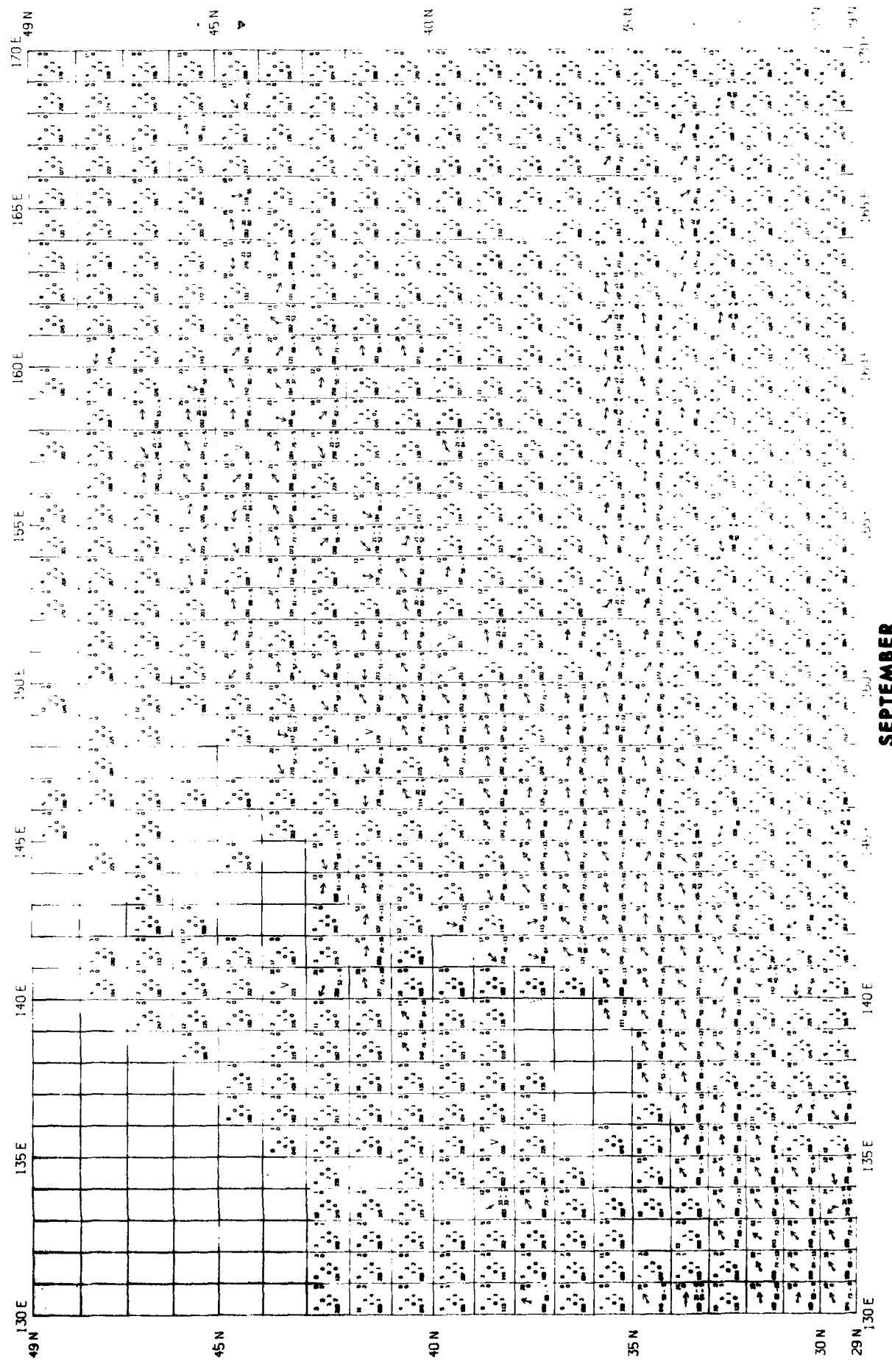
1





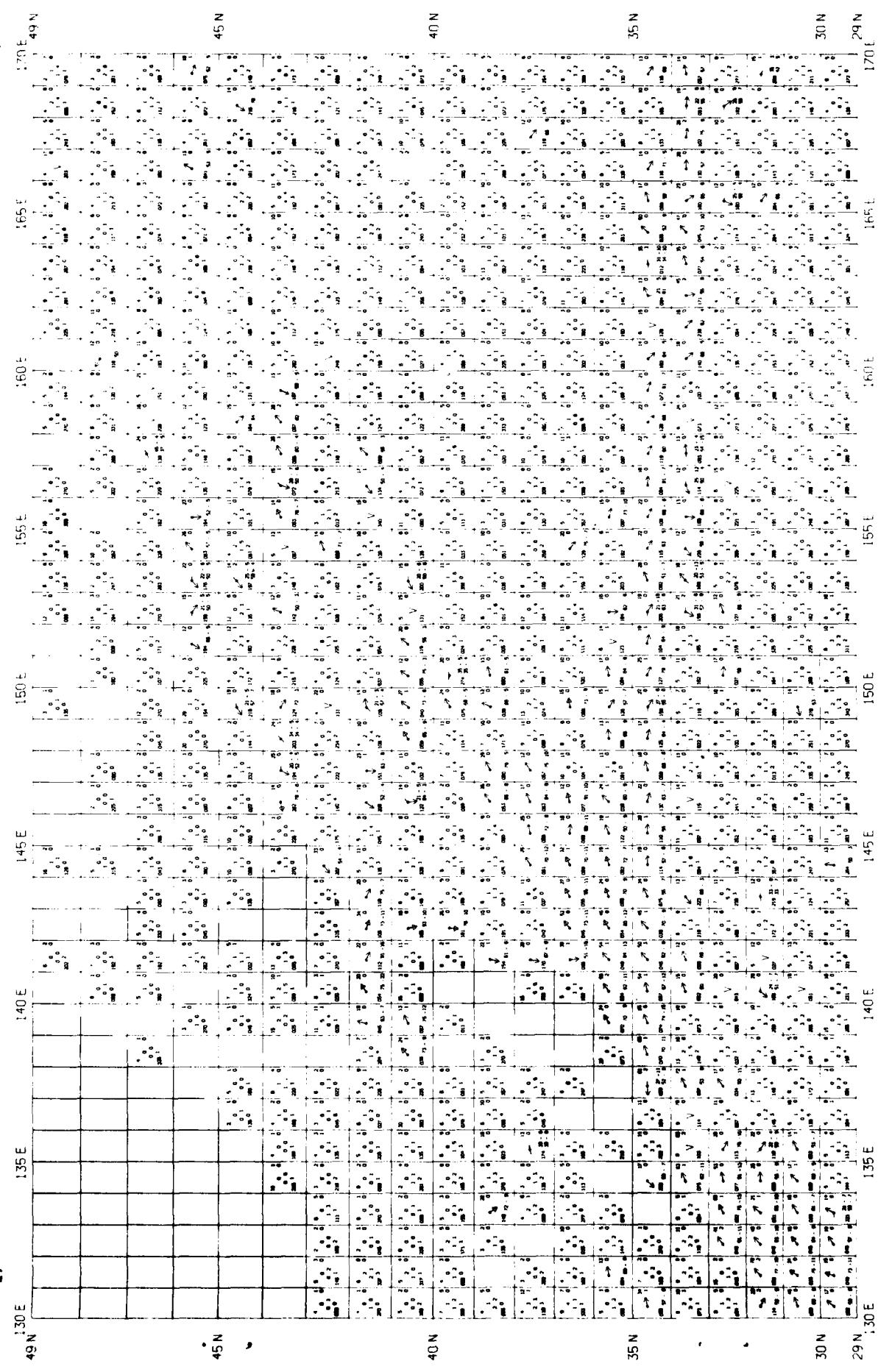
JULY

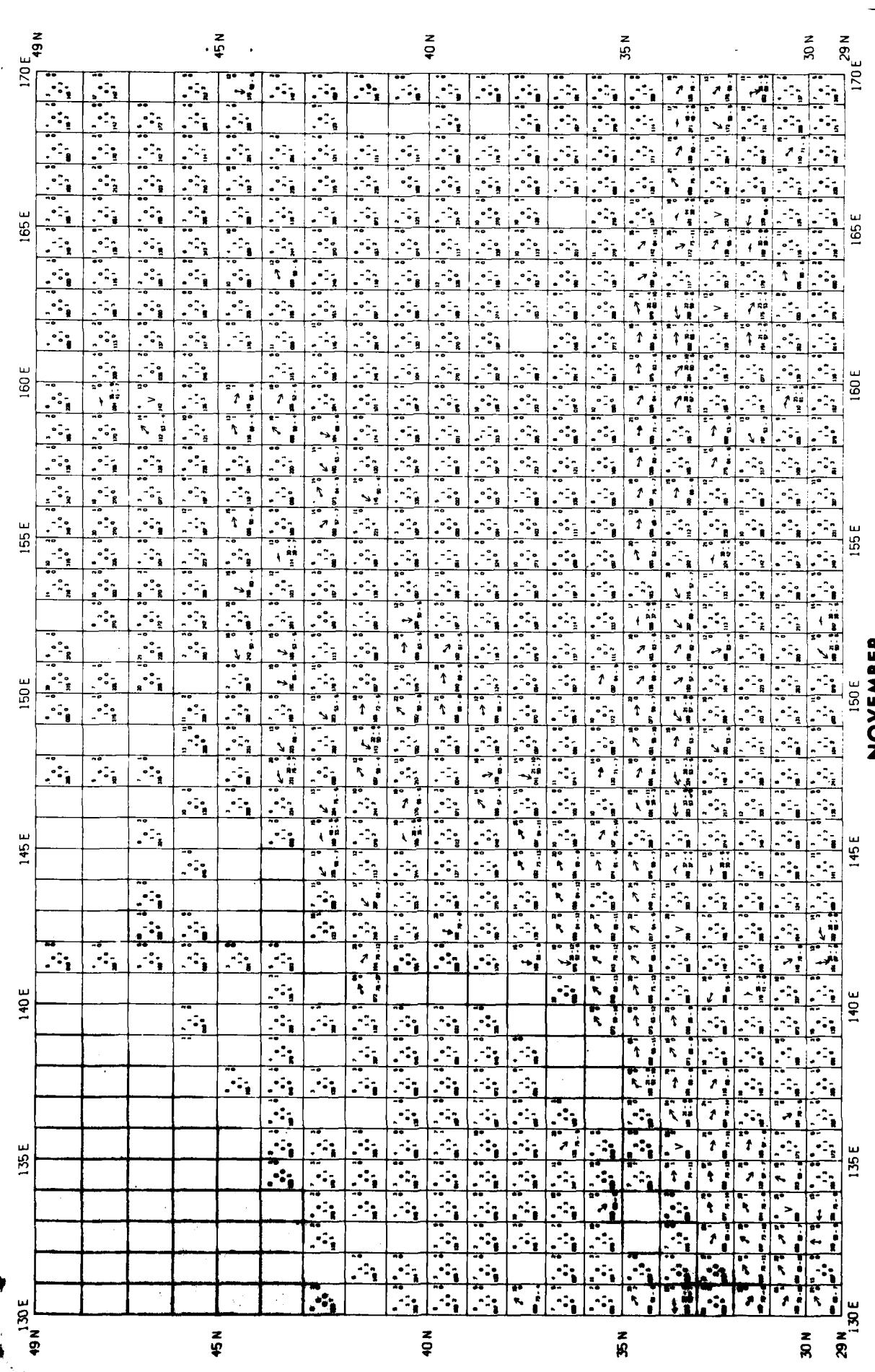




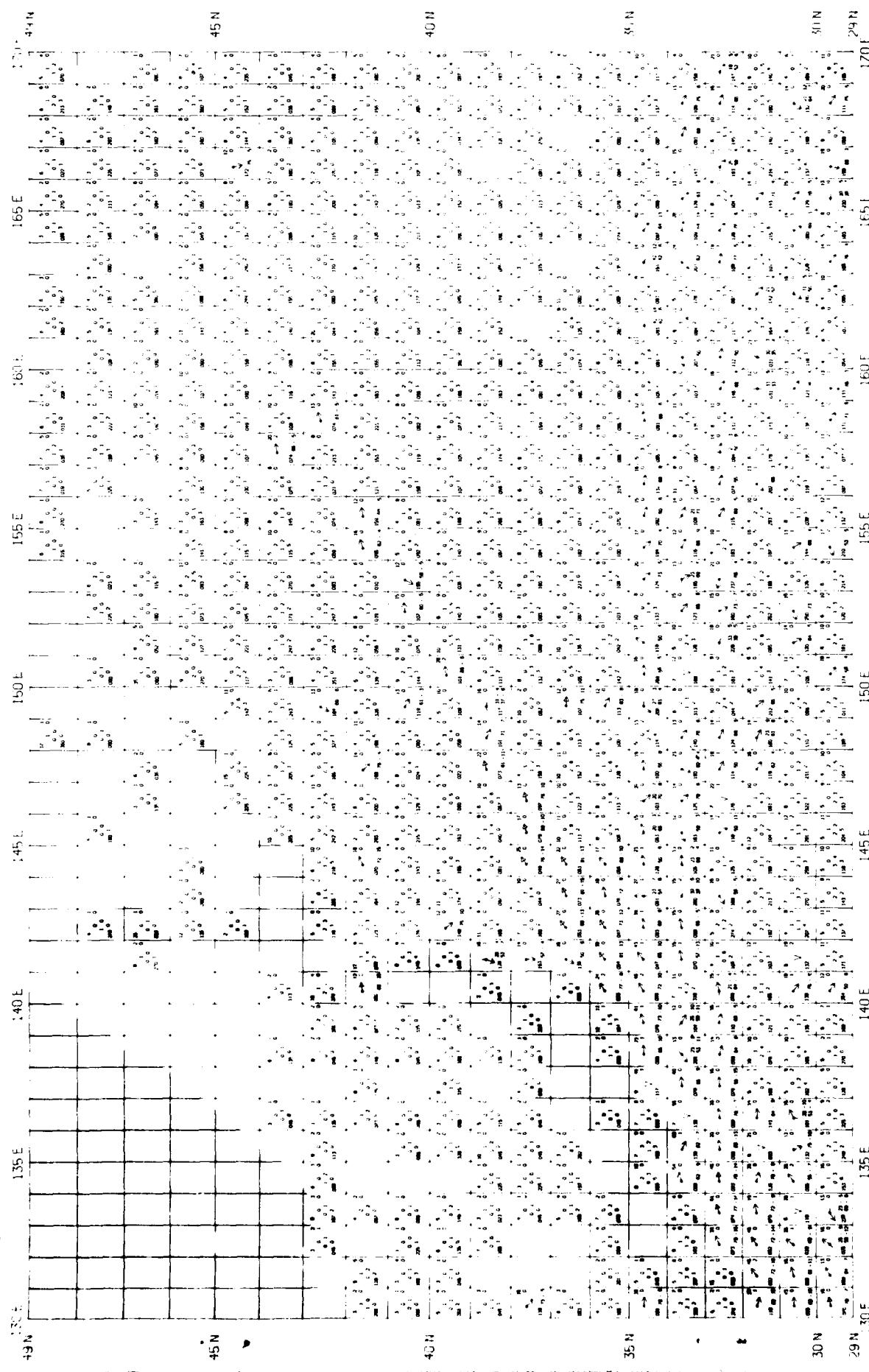
SEPTEMBER

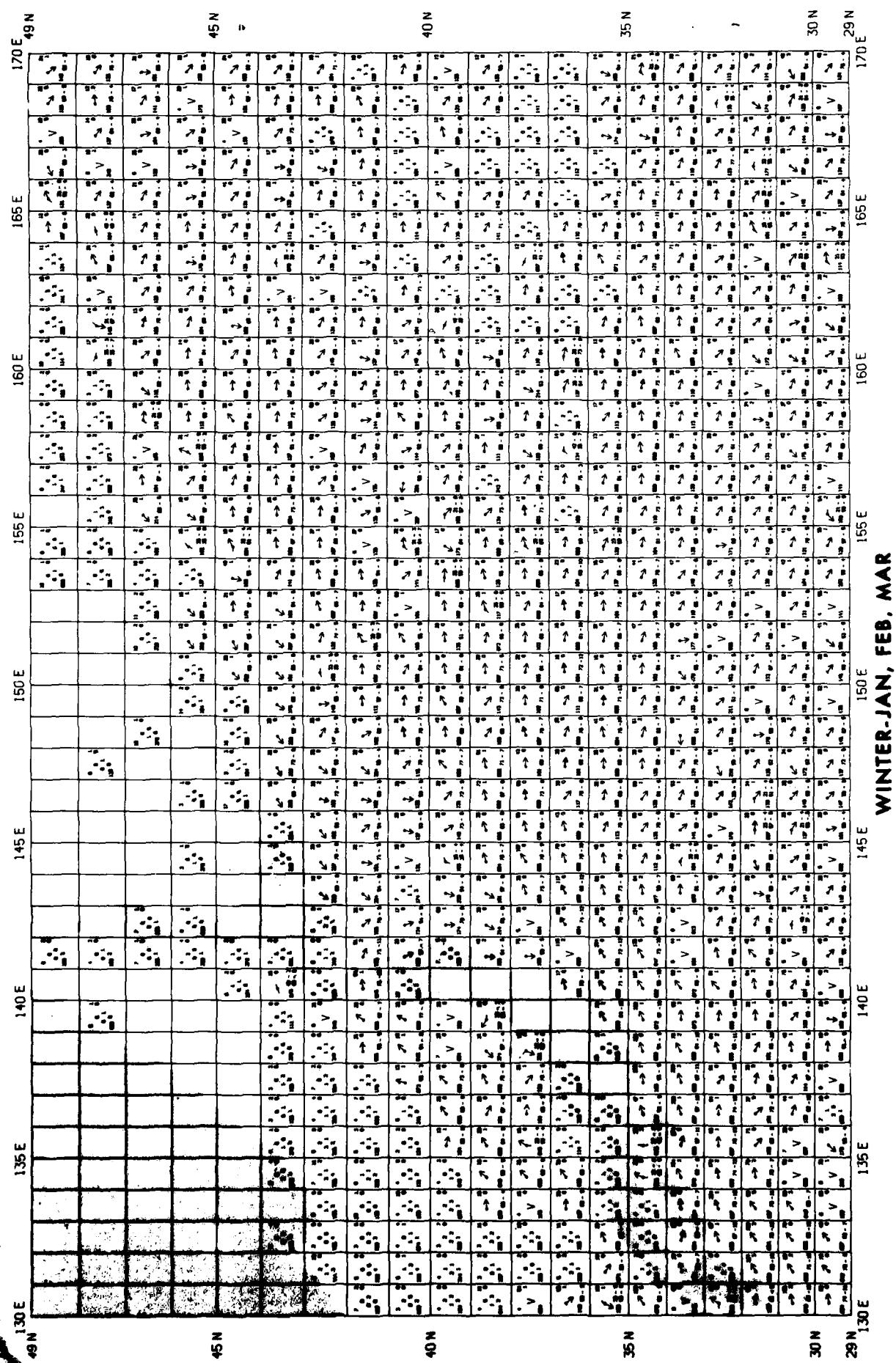
OCTOBER

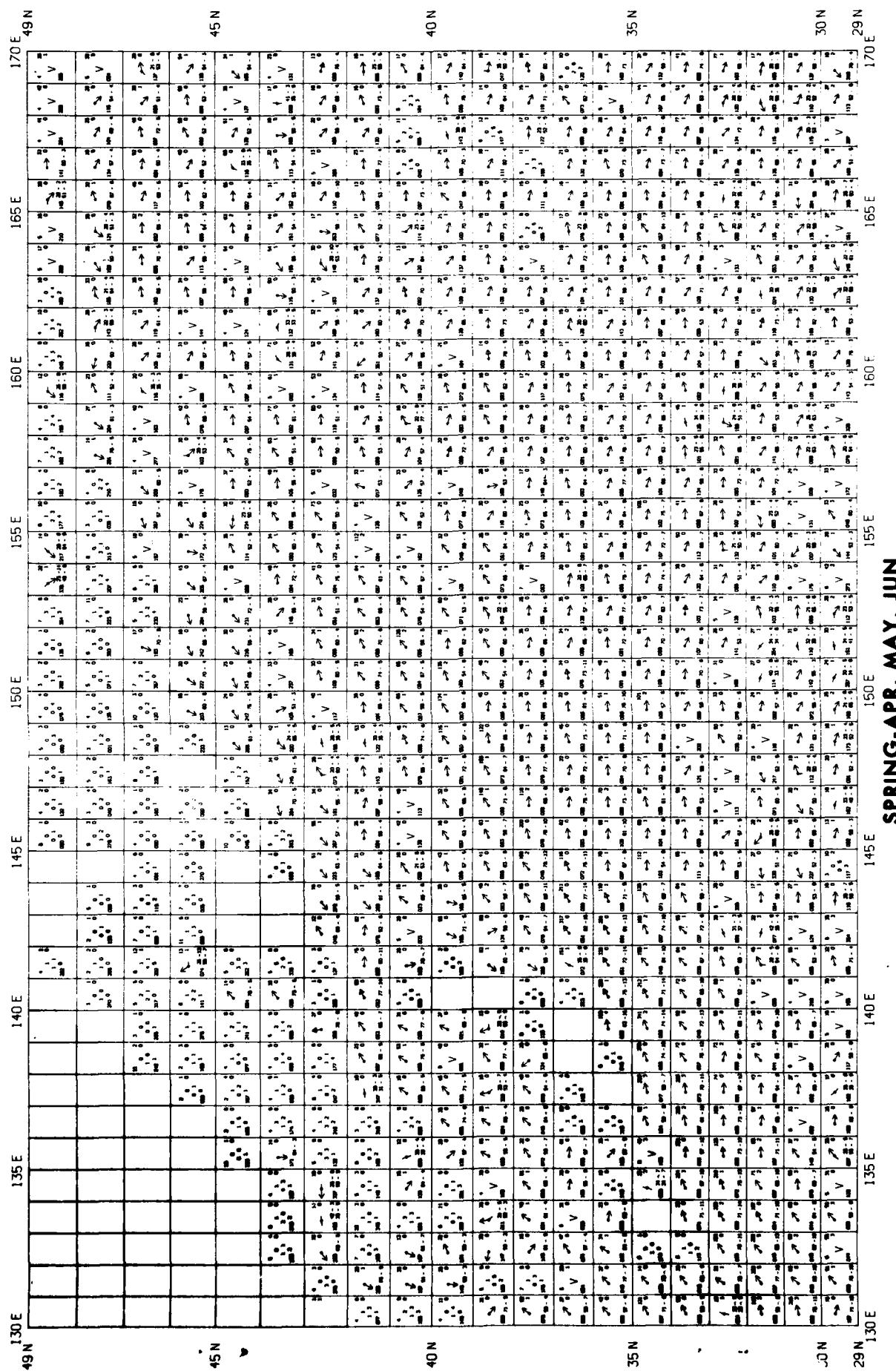




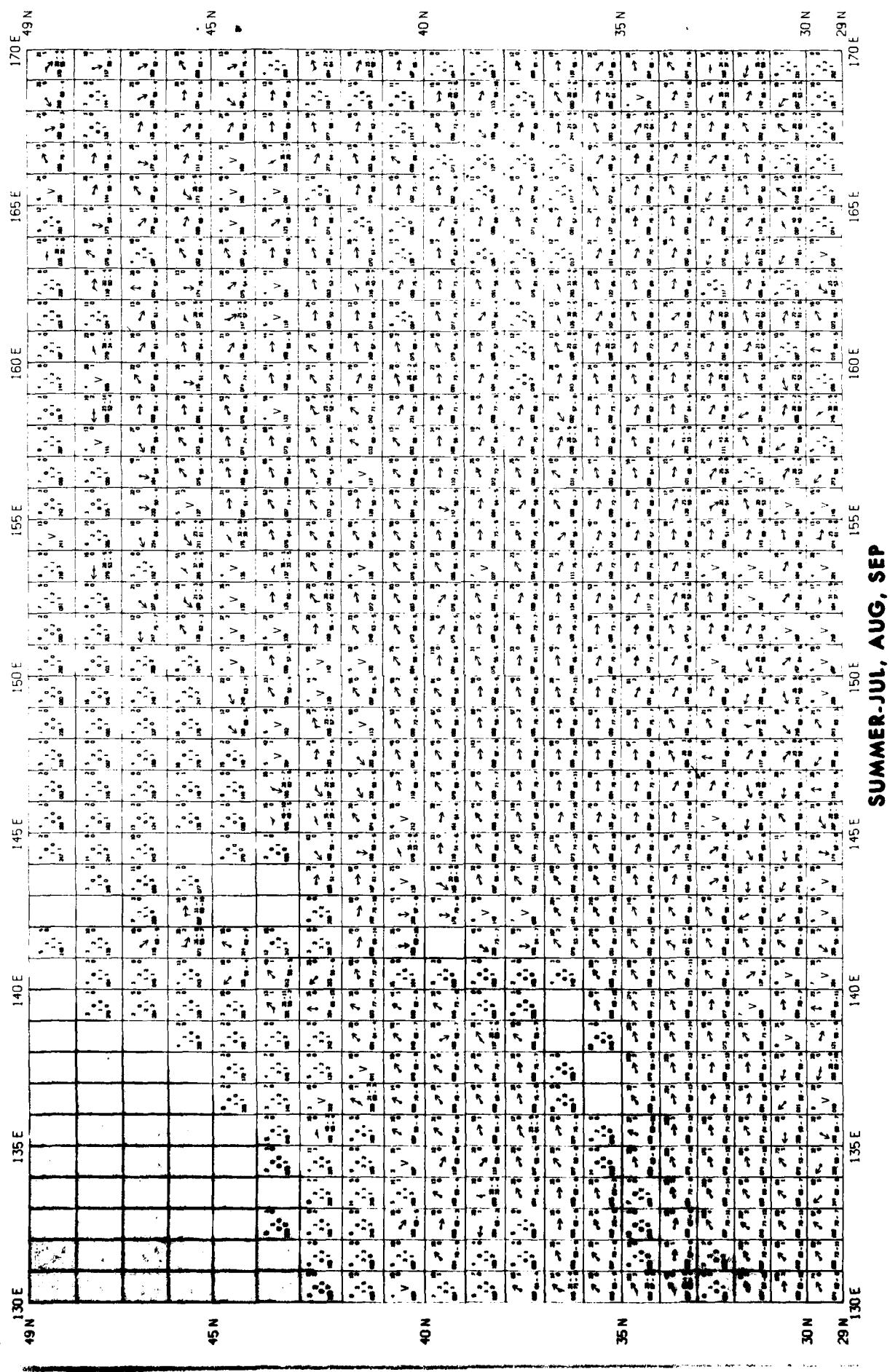
DECEMBER

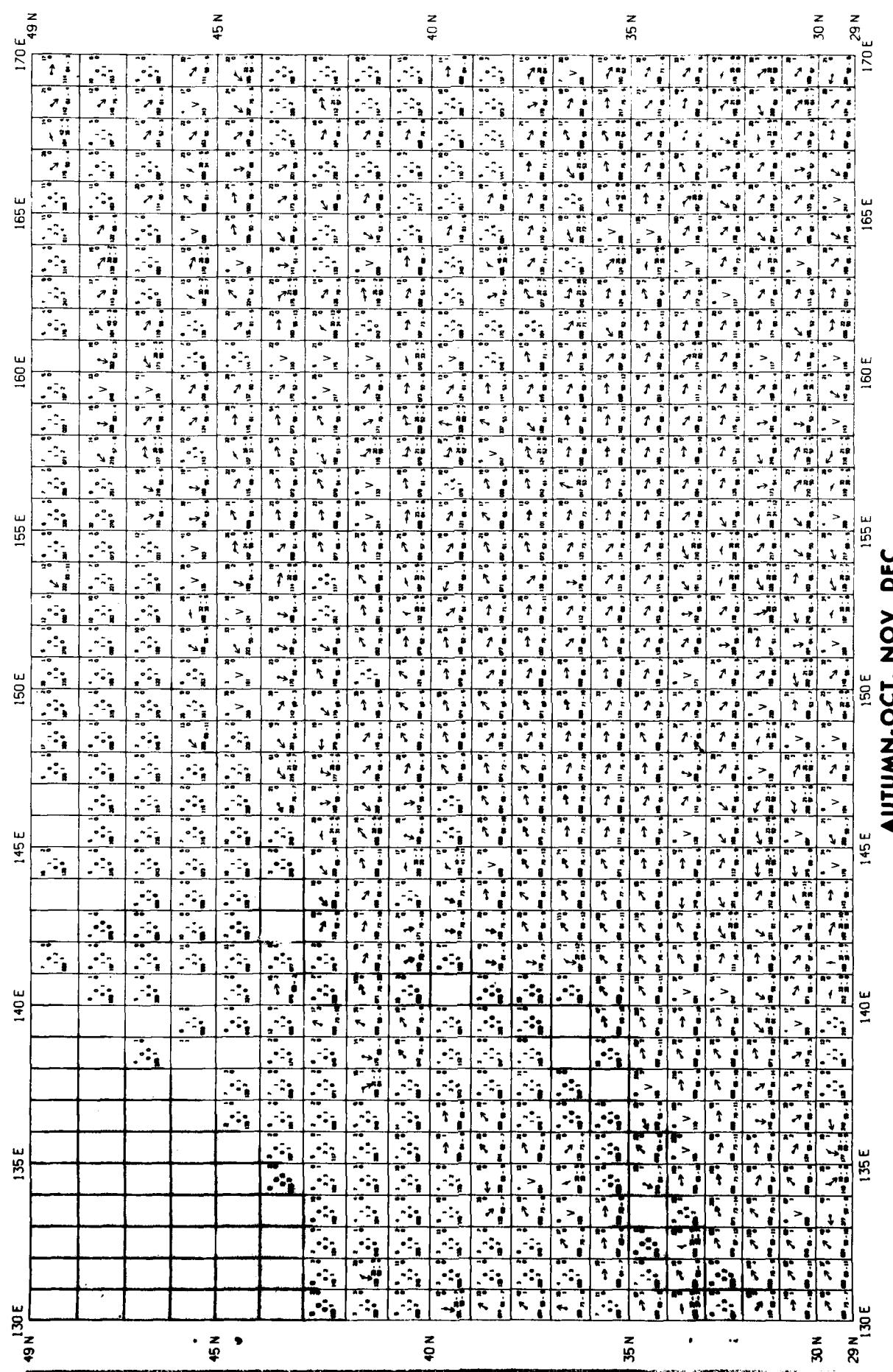






SPRING-APR, MAY, JUN





DISTRIBUTION LIST

NAVY

CINCPACFLT (02M)
COMTHIRDFLT
COMSEVENTHFLT
COMSUBPAC
COMNAVAIRPAC
COMPATWINGSPAC
PATWINGSPAC DET ADAK
PATWING 1
COMNAVSURFPAC
DIRNAVOCEANMET
FLENUMMEACEN
FLEWEACEN GUAM
FLEWEACEN PEARL
NAVWEASERVFAC SAN DIEGO
NAVWEASERVFAC YOKOSUKA
NWS D ASHEVILLE
NWS E ADAK
NWS E AGANA
NWS E ATSUGI
NWS E KADENA
NWS E MISAWA

OTHER GOVT.

NOAA/NODC
NOAA/NCC

PRIVATE

AMAX EXPLORATION INC.

FOREIGN

HYDROGRAPHER/R.A.N.
DEPT. TRANSPORTATION/AUSTRALIA

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		
READ INSTRUCTIONS BEFORE COMPLETING FORM		
1. REPORT NUMBER NOO SP1402-NP7	2. GOVT ACCESSION NO. AD-A689 747	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Surface Currents Northwest Pacific Ocean and Sea of Japan	5. TYPE OF REPORT & PERIOD COVERED Final	
7. AUTHOR(s) U.S. Naval Oceanographic Office	8. PERFORMING ORG. REPORT NUMBER	
9. PERFORMING ORGANIZATION NAME AND ADDRESS Naval Oceanographic Office	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS	
11. CONTROLLING OFFICE NAME AND ADDRESS	12. REPORT DATE APR 1977	
	13. NUMBER OF PAGES 22	
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)	15. SECURITY CLASS. (of this report)	
	16. DECLASSIFICATION/DOWNGRADING SCHEDULE	
18. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Surface Currents, Northwest Pacific, Sea of Japan		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This atlas, and the series of which it is a part, is computer generated and automatically plotted. It makes available to the user the most recent surface current data collected and will be updated whenever sufficient amounts of data are added to the data file. This and the other atlases are based on a vast quantity of data as compared to the previous manually-compiled editions printed in the mid-thirties.		

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 68 IS OBSOLETE
S/N 0102-010-8801

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

20. The surface current information is based mainly on ship drift, which is the difference between the dead reckoning position and the position determined by any type of navigational fix. This difference describes the direction and speed of the current.

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

**TED
80**